

HOW TO OPERATE THE  
**No. 15**  
**TELETYPEWRITER**  
ON TELETYPEWRITER EXCHANGE SERVICE



**TWX**

For assistance on a call  
or for special service, dial: 954-1212

For Information  
about TWX numbers, dial: 910 555-1212

To report trouble, telephone: \_\_\_\_\_

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# **HOW TO OPERATE THE NO. 15 TELETYPEWRITER ON TELETYPEWRITER EXCHANGE SERVICE**

## **FOREWORD**

These instructions cover operation of the No. 15 Teletypewriter on teletypewriter exchange service and are intended as a convenient source of reference for teletypewriter attendants following their training.

A Telephone Company representative is at the service of those who manage or operate teletypewriters. Her experience, advice and knowledge are available to use as occasion may require. This service is offered without charge in the interest of good teletypewriter service.

For training, information, or any other assistance in connection with teletypewriter service, please call your Telephone Company representative.

These instructions describe operation of the No. 15 Teletypewriter on Teletypewriter Exchange Service (TWX). Separate instructions for Private Line Service are also available and may be obtained from your Telephone Company representative when needed.

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## **TELETYPEWRITER SERVICE**

Teletypewriter service is a typewritten communication service furnished by means of electrically energized teletypewriters connected by a circuit so that operation of one machine instantly reproduces a typed message on the connected teletypewriters. In appearance and operation, a teletypewriter is similar to a typewriter.

The Telephone Company offers two kinds of teletypewriter service, Exchange Service and Private Line Service.

### **Exchange Service**

Teletypewriter Exchange Service, which is also known as "TWX," is similar to dial telephone service except that communication is typewritten on teletypewriters instead of spoken. TWX stations are connected to dial telephone central office equipment. Any TWX station may dial any other TWX station. On certain types of calls, such as Conference calls, connection is made by the TWX assistance operator. Connections provide two-way communication, allowing each station to send and receive alternately on the same connection.

### **Private Line Service**

Teletypewriter Private Line Service provides continuous, direct connection between two or more teletypewriters at specific locations. Private Line Service does not connect with a telephone central office and there is no interconnection with TWX stations. There are two kinds of Private Line Service, Half and Full Duplex.

Generally, Half Duplex Service provides alternate two-way communication. With this arrangement, a channel is furnished on which messages can be transmitted alternately in either direction, one station sending at a time. Each station may send and receive, but may not do both at the same time. Another arrangement of Half Duplex Service provides a channel for transmitting messages in one direction only, usually with one station equipped for sending and the other station(s) for receiving only.

Full Duplex Service provides simultaneous two-way communication. A channel is furnished for transmission in one direction, and another channel for transmission in the opposite direction. Two stations may send at the same time, one on each channel. Thus, a station may send on its outgoing channel and, at the same time receive on its incoming channel.

## DIRECT DIALING

Faster service is obtained by direct dialing. Whenever assistance or some special service is required in obtaining a connection, however, the call may be placed with the TWX assistance operator.

On calls dialed direct and on assistance calls, if the called station is arranged for automatic answering, the call will be completed to the called station whether or not an attendant is present at that station.

For special services that are available, calls are placed with the TWX assistance operator as described on Page 13. These special service calls are as follows:

### Conference Calls

Conference service is available to all TWX stations. This service permits several teletypewriter stations to be interconnected simultaneously for communication with one another. Thus, one TWX station can send a message to several other TWX stations, in the same or in distant cities, and receive replies from these stations.

### Sequence Calls

When a number of teletypewriter connections are required, they may be ordered at one time and completed in sequence, i.e., the TWX assistance operator will establish a succeeding call as soon as possible after the previous one is finished. Normally, however, such calls can be completed more quickly when dialed direct instead of given to the operator.

### Collect Calls

Out-of-town calls may be placed with the TWX assistance operator on a "collect" basis, that is, billed to the called station, if the latter agrees to accept the charge.

## TELETYPEWRITER EXCHANGE SERVICE

The dial equipment of a TWX station is connected to dial telephone central office equipment. Each TWX station is assigned a ten-digit dial telephone number.

The dial line is not equipped for voice communication, but on calls which are dialed direct the attendant can hear dial tone, "busy" signal, recorded announcements, and verbal responses.

**Note:** On calls placed with the TWX assistance operator, while the operator is attempting to reach the called station, the calling attendant will not hear any signals denoting the progress of the call.

If the called station is slow in answering, it may sometimes take a minute or so before the TWX assistance operator is free to type a report on the call, because if she is typing when the called station answers the typing will be garbled.

A six-button dial telephone set is provided, with only the receiver portion of the handset activated. The six buttons are used as the control buttons for placing the station in various modes of operation.

If desired, a TWX station may be arranged for automatic answering, i.e., an attendant need not type an answer to incoming calls. When an incoming call is connected to the station, the teletypewriter will automatically be placed in the answering mode, and the answer indication will automatically be typed back to the calling station. This automatic answer back is arranged in the station equipment by the Telephone Company. At the No. 15 teletypewriter, an automatic answer indication is the letter "V." At some other models of teletypewriters, the answer back is an answering phrase selected by the customer of a specified number of characters including spaces, punctuation and typing functions.

## DESCRIPTION OF THE NO. 15 PAGE TYPE

The numbers with the following items refer to the corresponding numbers on the illustration in Figure 1.

1. **Keyboard.** For a detailed description, see Page 6.
2. **Paper Release Lever.** (Located inside cover as illustrated in Figure 1.) When pushed back, frees the paper for adjustment. When pulled forward, holds paper tight.
3. **Page Copy.** Message being received.
4. **Line Space Lever.** (Under front cover.) When pulled in one direction, provides for double line spacing. When pulled in the opposite direction provides for single line spacing.
5. **Send-Receive Lever.** This lever must be up in SEND position to send a message. Lever drops to REC position if another station interrupts. Lever must be restored to SEND position before sending is resumed. (See Figure 2.)

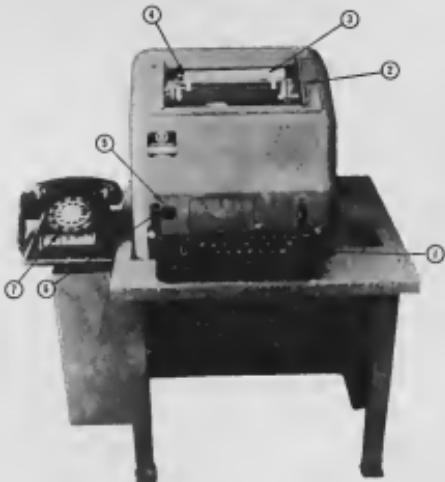


Figure 1

## SENDING AND RECEIVING TELETYPEWRITER



Figure 2

6. **Break Lever.** When there is a reason for interrupting an incoming communication, the break lever (small inner lever above outer lever) when pressed down on receiving station, will interrupt station that is sending. Attendant at receiving station will then raise send-receive lever to SEND position and type reason for interrupting. (See Figure 2.)

7. **Six-Button Dial Telephone Set.** For dialing numbers. Only the listening portion of the handset is activated. The six control buttons are:

Answer—when depressed, station is placed in the answering mode.

Originate—depress this button, before originating a call.

Local—depress this button when practicing or performing other local work off-line.

Clear—depress this button when ready to disconnect.

Test—this control button generally is used only by the Telephone Company for testing purposes.

Blank—this blank control button has no function at present.

A copy holder may also be provided and located at the right of the teletypewriter. This holds the message being transmitted. A line guide helps the attendant to follow the lines to be typed.

By turning the platen handle, the paper in the machine may be turned either up or down without affecting other machines on the connection. This should not be done, however, while the machine is in motion.

## KEYBOARD

The teletypewriter keyboard (Figure 3) is similar to a typewriter keyboard but has only three rows of keys, instead of four. It types the letters of the alphabet in capitals only. By depressing the FIGS key, which takes the place of the SHIFT key on the standard typewriter keyboard, it types numerals and other special characters that are shown on the upper portion of the key tops.



Figure 3

On many standard typewriters, the lower case L is used for the numeral 1 but, since there are no lower case letters on the teletypewriter, the numeral 1 is located on the upper case Q.

The attendant should use a light, even, rhythmic touch on the keys. Force is unnecessary because the teletypewriter is operated electrically. Pressing a second key before the first is released may result in one of the characters not being typed.

To become a proficient teletypewriter attendant, proficiency in the touch system of typing is highly desirable. Under the touch system the CAR RET key and the A key are used as guide keys for the right hand and left hand respectively. The little finger of each hand is used on the guide key.

To shift the teletypewriter from the lower to the upper case for typing the numerals, punctuation marks, and special characters, press the FIGS key.

To unshift the teletypewriter from the upper to the lower case, press the LTRS key or the space bar. The LTRS key unshifts only; the space bar unshifts and spaces.

To space between either words or characters, press the space bar. The teletypewriter will continue to space as long as the space bar is held down and will unshift from the upper to the lower case in one operation, as it spaces. When an upper case character follows the space operation, press the FIGS key.

To return the carriage to the left margin, press the CAR RET key. Usually the machine is adjusted to type 72 characters to a line, which includes the spaces between typed words. A margin bell rings about 6 characters before the end of the line.

To feed the paper up one line at a time, press the LINE FEED key.

To begin a new line, press the CAR RET, LINE FEED and LTRS keys, in this order. This returns the carriage to the beginning of the next line before a character is typed.

To ring the bell for signaling the distant station during a connection, press the FIGS key and then the BELL key.

When the WRU (FIGS C) (WHO ARE YOU) key is depressed, it prints a maltese cross at both the sending and receiving stations. It generates the automatic answer back at stations thus equipped. As an exception, however, where the automatic answer identification is a "V," and at stations not equipped for automatic answering, the attendant must type her answer identification in order to respond to this inquiry by the sending station.

Since the station sending the WRU may not know whether the other station has an automatic answer back or if so, what kind, the BELL key is always operated before depressing the WRU key.

## OPERATING PRACTICES

### Answering a Call

If your station is equipped for automatic answering, when an incoming call is connected to the station, the teletypewriter will be turned on and placed in the answering mode automatically. The answer identification "V" will be automatically typed back to the calling station.

If your station is not equipped for automatic answering, proceed as follows:

1. When the telephone bell rings, depress the ANSWER control button.
2. If a send-receive-break key is provided, make certain that it is in the SEND position.
3. Press the CAR RET, LINE FEED, and LTRS keys.
4. Answer by typing your firm name, as, for example, "SMITH JONES CO".

### **The Message**

The calling attendant should type her firm name and city, and then the message.

### **Disconnecting**

After both stations have typed END, depress the CLEAR control button, thereby disconnecting.

### **To Interrupt a Sending Station**

The sending station should be interrupted when your copy becomes scrambled, overlined, or piled up by depressing the send-receive-break key to BREAK position. As an exception, if a break key is provided on the table, depress it for about two seconds.

Type your reason for interrupting, first raising the send-receive-break key to SEND position.

In explaining the reason for breaking in, you may use one of the following phrases:

"SCRAMBLED REPT FROM . . . . ."  
"OVERLINING REPT FROM . . . . ."  
"PILING REPT FROM . . . . ."

If the trouble recurs, again interrupt. Both stations should disconnect and the station originating the call should then call the TWX assistance operator and request a better connection.

## **Originating a Call**

### **1. Use of Teletypewriter Directory**

If you are not sure of the number you wish to dial, consult the TWX Directory.

The directory is arranged by state, city and town headings in alphabetical order, with customers listed alphabetically under the city or town heading. A customer's listing consists of name, business (if not clearly indicated by the customer's name), address, department (where more than one), and the TWX number consisting of a ten-digit station number.

The directory also contains YELLOW PAGES, "Teletypewriter Classified Directory," in the back of the book. Listings in this section are arranged by business headings in alphabetical sequence, with customers listed alphabetically under the business heading. A customer's listing consists of name, city or town and state, department (where more than one), and the TWX number.

If the symbol § appears in the directory preceding a listing, it means that the station is equipped for automatic answering, and incoming messages may be received whether or not an attendant is present. There are two kinds of automatic answer, the letter "V" or a specified number of characters. In the latter case, the automatic answer is shown in the directory.

### **2. Reaching Information**

If the desired number does not appear in the directory and you are sure they have TWX service, reach INFORMATION by dialing the code: 910 555-1212. The INFORMATION BUREAU is located in St. Louis and may be reached from all TWX stations by means of the same code.

After INFORMATION answers, type the details of the call giving the city and state first, followed by the called firm name and address. If a particular branch or department is desired, this is typed last. For example:

"SPRINGFIELD MASS ACME MILLS 109 MAPLE  
SHIPPING DEPT "

Do not abbreviate city names. Standard abbreviations may be used for state names, however, as well as for street (ST), avenue (AVE), road (RD), boulevard (BLVD), etc.

When INFORMATION furnishes the number, acknowledge and disconnect by depressing the CLEAR control button.

It is desirable to keep a record of numbers obtained either from the directory or from INFORMATION so that these numbers will be readily available for use on future calls. Always record all ten digits of a number and also note their answer back, if they have one.

### **3. Dialing**

- (a) Pick up the receiver and depress the ORIGINATE control button; listen for dial tone; and dial the desired number according to local instructions.
- (b) Listen for any signal that may be received, such as a "busy" signal.
- (c) When connection is made to the called station, a momentary spurt of high pitched tone is heard. After about one second, both the calling and called teletypewriters are turned on automatically. The handset is placed in the cradle of the telephone set.
- (d) Ascertain that the send-receive-break key is in the SEND position.
- (e) When the called station's answer identification is received, for example, "SMITH CO NY," proceed to type your message.

Note: If any special service is desired, such as making a call "collect," do not dial but place the call with the TWX assistance operator.

### **4. Disconnecting**

After both stations have typed END, depress the CLEAR control button, thereby disconnecting.

On calls completed to stations with automatic answer-back, depress the CLEAR control button as soon as you have typed END.

## **5. Reaching TWX Assistance Operator**

Whenever you encounter difficulty in dialing a call, you may obtain assistance from the TWX assistance operator.

If an Intercepting operator is heard to answer, or, if you know that the desired number has been changed or disconnected, dial the TWX Assistance operator. She will give you a report on the status of the number.

To reach the operator, dial the code: 954-1212. When the operator answers, type the details of your call by giving the 10 digits of the called number; the reason for requesting assistance; and the 10 digits of your number. For example,

"415 399-5788 NO RING THIS IS 212 393-3400 "

The operator will try to complete the call for you.

Other typical reasons for requesting assistance are shown below, including reason for assistance as it is to be typed to the operator:

REASON	TYPE TO OPERATOR
Wrong teletypewriter number reached	"(cld no.) (no. of times) W NO (time of each attempt) THIS IS (clg no.)"
*Wrong telephone number reached	"(cld no.) (no. of times) VERBAL W NO (time of each attempt) THIS IS (clg no.)"
Intercepting operator or recording reached	"(cld no.) INTERCEPT. THIS IS (clg no.)"

\*No more than 2 attempts are made to reach a number  
if a telephone customer is heard to answer.

## **6. Obtaining Credit**

Whenever it is necessary to make a request for credit or for the adjustment of time or charge, reach the TWX assistance operator and type the details of your request to her.

When a wrong number is reported and the operator establishes connection to the correct number, she automatically gives credit for the wrong number call(s).

Where a wrong number is reached first but the correct number is reached on a subsequent call, credit may be obtained by dialing the operator and typing:

"CREDIT (cld no.) (no. of calls) W NO (time)  
THIS IS (clg no.)"

## 7. Special Practices

### To Correct a Typing Error

- (1) If you detect a typing error immediately after making it, correct the error at once, typing "XXX" followed by a space, and then type the corrected words.
- (2) If you detect a typing error later, make the correction by typing at the end of the communication, the word "CORRECTION" followed by, for example, "THIRD LINE FOURTH WORD SHOULD READ....." typing the corrected words.

### Delayed Calls

When dialing a number, if you encounter "busy" or other delay, disconnect and make another attempt later.

When the operator notifies you of a delay in completing a call placed with her, she may either offer to try the call again or suggest that you place your call again at a later time. Acknowledge with "OK" and depress the CLEAR control button.

Whenever the operator tries the call again and is able to complete it, she will call you and report ready, as for example, "RDY WITH (cld place)," adding, if necessary, to the called station, "PLS ANNOUNCE (cld place)."

When the called station answers, type your firm name and city.

### To Signal the TWX Assistance Operator During a Call

To signal the operator during a call which has been placed with her, depress the BREAK twice momentarily. This gives the operator a continuous signal which she will answer at the first opportunity.

### To Signal the Distant Station During a Call

Press the FIGS key and then the BELL key. If this is followed by operation of the (FIGS-C) WRU key, it will generate the automatic answer back at a station equipped to return an automatic answer back *phrase*. At stations having "V" for their answer identification and at stations not equipped for automatic answering, the attendant must manually type her answer to the WRU inquiry.

If lower case characters are then desired, shift to lower case before proceeding to type unless the space bar is operated.

### To Interrupt (BREAK) Another Station

The sending station should be interrupted and asked to repeat when your copy becomes scrambled, overlined, or piled up. This interruption is accomplished by depressing the BREAK key for about two seconds. Wait for typing to stop.

Then, after operating the key to the SEND position, type your reason for interrupting.

If your keyboard locks when you are transmitting, understand that the other party has operated the break lever to interrupt. Wait for the attendant to type the reason for interrupting, as for example, scrambling, overlining, piling up, etc. Then restore the send-receive-break key to the SEND position, and proceed accordingly with your communication from the point in the message indicated by the attendant who interrupted.

If recurring trouble is experienced, both stations should disconnect and the one that originated the call should reach the operator and request a better connection by typing, "BETTER CON."

## SPECIAL SERVICES

The following calls on which some special service is desired must be placed with the TWX assistance operator. On a collect call, whenever a called station is arranged for unattended service and you wish to be connected whether or not an attendant is on duty at that station, type the called number to the TWX assistance operator followed by "U" (unattended).

### **Conference Calls**

To place a conference call, reach the TWX assistance operator and type "CONF" followed by the numbers of the desired stations, including the word AND before the last of these numbers, adding "THIS IS (clg no.)" and hold the line.

The operator will notify you when the conference is ready. Then type your firm name and city and start your communication.

When you have finished your communication, type "END PLS ACK," and call the roll of stations by typing the name of each called place with or without the number of each station. When all the acknowledgments have been received, type "DISCONNECT" and then disconnect by depressing the CLEAR control button. In case no acknowledgment is required from the called stations, terminate the conference by typing, "END DISCONNECT" and depress the CLEAR control button.

Note: Do not use the WRU (Who Are You) key (Figs C) when calling the roll at the end of a conference call, because all stations on the connection with automatic answering will then respond to this code simultaneously and typing will be garbled.

### **Sequence Calls**

Calls dialed direct by the attendant can be completed faster than calls placed with the TWX assistance operator. However, if it is desired to place a number of calls to be completed in sequence, reach the TWX operator and type "SEQ" followed by the call numbers of the desired stations including the word AND before the last of these numbers, adding: "THIS IS (clg no.)."

The operator will notify you when each connection is ready, as for example, "RDY WITH (cld place)." When the called station answers, type your firm name and city, and proceed with your communication.

Be sure to disconnect by depressing the CLEAR control button after each call.

### **Collect Calls**

To place a collect call, reach the TWX operator and include the word "collect" with your order.

The operator will announce the call as "COLLECT." If the called party accepts the charge, announce your firm name and city, and proceed with your communication. Whenever a called station includes "OK Collect" when answering, an announcement by the TWX operator is unnecessary and communication may begin.

### **Requesting Time and Charge**

Whenever it is necessary to obtain the time and charge at the end of a call, reach the TWX assistance operator and place the call with her including "T & C" with your order.

At the end of the communication, do not operate the CLEAR control button because this will disconnect you from the operator. Instead, signal the operator and wait for her reply. After she has typed the time and charge information to you, acknowledge and disconnect by depressing the CLEAR control button.

## **EXAMPLES OF MESSAGES**

### **Heading of Formal Message**

The first line shows the name and TWX number of the calling station; the date and time at which message is sent; and, where it is the practice to number the messages, the serial number of the message.

The name and complete address of the called party then follows, for example:

ALPHA CO 212 393-1234 SEPT 1 1962 2-15 273  
MR F S BROWN  
BRATTLEBORO LUMBER CO  
218 S LA SALLE ST  
CHICAGO ILL

### **Heading of Informal Message**

An informal message being sent to another branch of the same company is in the nature of a memorandum. The calling office and the name of the particular individual in the called office are shown.

ALPHA CO NY CLG  
MR S F SMITH PRODUCTION

### **The Message**

This example of a message shows a reasonable use of punctuation and indicates certain forms of abbreviation which are commonly understood. To insure numerical accuracy, the numerals in the body of the message are repeated at the end of the message for verification. The sample also shows how the service is used for two-way communication.

SHOP ESTIMATES INDICATE WE CAN PRODUCE  
ENTIRE OUTPUT OF NO. 17H3 CHROM PLATED  
CLAMPS AT OUR PHILA FACTORY, OUTPUT  
ABOUT 12,000 PER DAY AT \$62.50 PER  
THOUSAND, DIVIDED \$42.50 FOR MATERIAL,  
\$16 FOR LABOR AND \$4 SUPERINTENDENCE  
AND HOUSE SERVICE. CAN REACH FULL  
PRODUCTION 15 DAYS AFTER AUTHORITY  
RECEIVED

T KIRWIN

17H3-12,000-62.50-42.50-16-4-15  
HAVE YOU RECEIVED AUTHORITY TO  
PROCEED WITH BETA CO ORDER.  
GA PLS  
NO EXPECT WORD TOMORROW  
END  
END

## HORIZONTAL TABULATION

On teletypewriters that are not equipped with a horizontal tabulator device, tabulation is accomplished by using the space bar. It is suggested that tabulated material be set up with a minimum number of spaces between columns and that the first column start at the left margin to save circuit time. In each column enough spaces should be allowed to accommodate the number of characters in the longest item in the column, and a maximum of five spaces should be used between the columns.

ITEM	GRADE A	GRADE B	GRADE C
4295	\$3.05	\$2.75	\$2.50
716	.95	.85	.75
92851	5.35	5.00	4.65
3820	9.50	7.00	5.75
98926	10.25	9.80	8.60
527	.95	.80	.70

## HOW TO USE TWX SERVICE TO THE BEST ADVANTAGE

### Handling Calls

Answer incoming calls promptly by typing your firm name, unless your station is equipped with automatic answering. In the latter case, if the LOCAL control button is depressed, the automatic answer feature will be disabled until the ANSWER control button is depressed.

Faster service is obtained on outgoing calls by dialing direct. When assistance is required, or, when some special service is needed, such as making a call "collect," the call is placed with the TWX assistance operator.

Have all the necessary material ready before originating a call, so that you will be ready to proceed as soon as the called station is reached.

Make sure of the called TWX number before making a call.

Use the latest copy of the TWX Directory and keep up-to-date your list of frequently called numbers.

Start your message as soon as an answer is received from the called station. The following procedure is recommended:

- a. Have the message that is to be transmitted ready before placing a call. Whenever possible, avoid sending from dictation.
- b. After dialing, listen for any signals, such as the "busy" signal. On calls placed with the operator, she will report on the call.
- c. Note the called station answer to make sure it is the correct station.
- d. Immediately identify your station and proceed with the communication.

### Typing

Accurate and speedy typing is important.

Errors in typing, especially where figures are involved, may have serious consequences.

Whenever an error is noted, correct it promptly, thereby reducing retyping to a minimum. Whenever recurring trouble is encountered on a connection, such as scrambling of type, report the trouble to the operator promptly if you originated the call, and request a better connection.

When you type figures in your communication, a verification of the figures at the end of the communication will help to insure accuracy.

Slow typing increases chargeable time and so increases the cost of the communication. The one sure way to develop speed in typing is to use all available spare time to practice. Depress the LOCAL control button in order to practice; when finished, depress the CLEAR control button.

In using abbreviations and codes to speed up the communication, use only those abbreviations and codes that you are sure will be understood by the other attendant.

#### **Disconnecting**

Prompt disconnection reduces chargeable time and makes calling and called stations available for other messages.

Disconnect by depressing the CLEAR control button.

If you wish to make successive calls, disconnect after each call and then originate the next call.

#### **Practice or Other Local Use of the Teletypewriter**

To use the teletypewriter locally for practice purposes, depress the LOCAL control button. When finished, depress the CLEAR control button.

Use of the teletypewriter in the LOCAL position does not make the station "busy" to incoming calls. If an incoming call is received, discontinue the local work, depress the ANSWER control button, and type your answer to the call unless your station is equipped for automatic answering.

## **TELETYPEWRITER MAINTENANCE**

The Telephone Company maintains the teletypewriter and the service. Teletypewriters are inspected and serviced periodically. It is the attendant's responsibility to:

- a. Keep the teletypewriter equipped with sufficient paper and with standard teletypewriter ribbons that are in good condition.
- b. Keep an adequate supply of paper and ribbons on hand.
- c. Keep the type clean. Use a dry typewriter brush to clean the type. Do not use any cleaning solutions.
- d. Report trouble by telephone to the number specified locally by the Telephone Company.

## Inserting Paper

### 1. Friction Feed

Check the supply of paper in the teletypewriter frequently to avoid having it run out in the middle of a message. The approach to the end of the roll usually is indicated by a colored streak along the edge of the paper. Place a new roll of paper in the teletypewriter as soon as feasible after this streak appears.

To place the new roll of paper in the teletypewriter (Figure 4), proceed as follows:

1. When the teletypewriter is not in use, depress the LOCAL control button and open the front and rear covers of the teletypewriter. Turn the platen crank to roll back the paper from under the platen.
2. Push back retaining plates and remove the roll from the spindle grooves.
3. Insert the spindle in the new roll with the spindle spring on right side and with the paper feeding from underneath the roll toward you.
4. Place the spindle in the right groove with the spindle spring on that side, and then in the left groove. Push the retaining plates forward.
5. Feed the paper over the straightening rod and directly under the platen, bringing it up between the platen and the paper fingers by turning the platen crank.

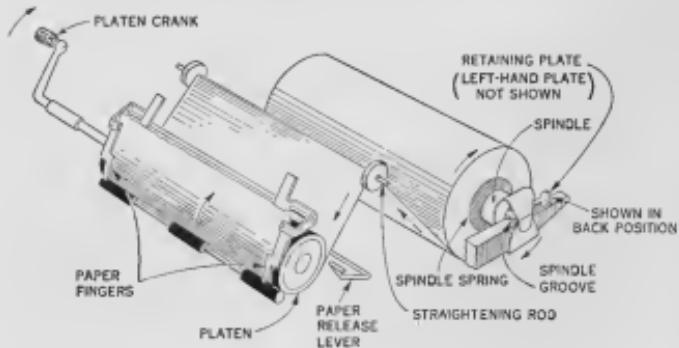


Figure 4

6. Push back the paper release lever, straighten the paper as you would in an ordinary typewriter, and pull the paper release lever forward.
7. Close the rear cover and roll the paper up over it, using the platen crank. Close the front cover.
8. Depress the CLEAR control button.

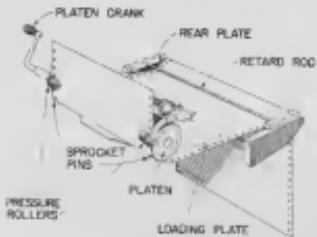


Figure 5

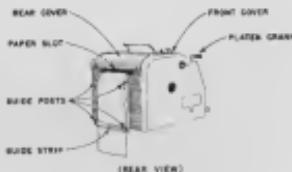


Figure 6

## 2. Sprocket Feed

To place the new supply of paper in the teletypewriter (Figures 5 and 6), proceed at follows:

1. When the teletypewriter is not in use, depress the LOCAL control button and open front and rear covers of teletypewriter.
2. Raise pressure rollers.
3. Feed paper under guide strip, between guide posts, into paper slot in rear of cover, over rear plate, under retard rod, over loading plate, and insert the leading edge of paper under platen.
4. Align paper by placing perforations in paper on sprocket pins and lower pressure rollers. This operation must be continuous, otherwise paper may slide back into paper box.
5. Turn the platen crank until the paper reaches the first typing line. Then close rear and front covers. 
6. Depress the CLEAR control button.

## Changing the Ribbon

Check the condition of the ribbon frequently and replace it when it becomes worn. Otherwise it may produce illegible copy or cause service interruptions. Change the ribbon outside of busy hours. Use a one-half inch ribbon with reversing rivets on a spool designed for teletypewriter use.

To change the ribbon (Figure 7), depress the LOCAL control button and proceed as follows:

1. Open front cover. Lift both spools from spool shafts.
2. Disengage old ribbon from ribbon carrier hooks, reverse arms and roller guides.
3. Remove old ribbon from one spool, hook end of new ribbon to hub of empty spool, and wind ribbon about 6 inches on spool, until reversing rivet is on spool.
4. Replace the spools on the shafts, making sure that the spools engage the spool shaft pins and that the ribbon feeds from the back of each spool.
5. Pull ribbon forward around both roller guides. Insert ribbon in ribbon carrier and under ribbon carrier hooks.

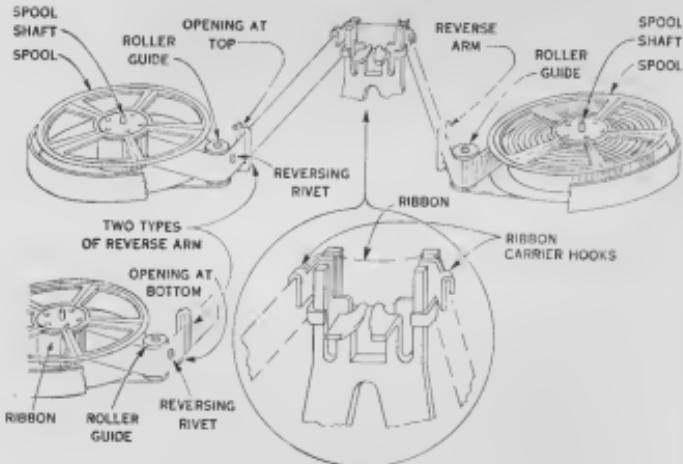


Figure 7

6. Place ribbon in slots of both reverse arms. Do not try to change position of reverse arms. Take up the slack in ribbon by turning the free spool.
7. Close front cover.
8. Depress the CLEAR control button.

Note: If an incoming call is received while you are changing the paper or ribbon, always complete this work before answering the call.

## **HOW TO REPORT TROUBLE**

If the equipment is not operating satisfactorily or if you know that repairs are needed, make a telephone call to the number specified locally and report the trouble. Make sure that your report includes your teletypewriter station number.

### **Teletypewriter On but not Running**

Make sure that the plug on the teletypewriter power cord is properly seated in the power outlet.

If the power plug is properly connected, make sure that the power supply has not failed, as indicated by the failure of your lighting system. Report such trouble as you would failure of the power for lights in your office.

### **Paper Feed Troubles**

If the paper feeds to one side, does not feed, tears, or jams, check the following:

Has the paper been placed in the machine according to instructions?

Is the paper release lever in the proper position?

Has too much paper accumulated behind the machine?

Has the paper been torn correctly?

Where superfold paper is used, is the container holding the paper correctly located?

If unable to clear the trouble, notify the Telephone Company.

### Ribbon Troubles

If the ribbon is feeding and the printing is faint, replace with a new ribbon.

If the ribbon is not feeding, make sure that it has been put on according to instructions.

If the edges of the ribbon are caught in some part of the machine, the ribbon is either badly worn or is of the wrong type. Therefore, replace the ribbon.

If unable to clear the trouble, notify the Telephone Company.

### USE OF AUTOMATIC TEST LINE

The automatic test line (ATL) provides a source of signals needed to test a TWX station.

Generally, a test is made only as directed by the Telephone Company. The following steps are involved in testing the station:

- a. Before testing with the ATL, the machine is tested in the LOCAL mode.
- b. To test with the ATL, proceed as follows:
  1. Depress the ORIGINATE control button and listen for dial tone.
  2. Dial the locally specified test line number. Listen for ringing signal.
  3. After about 1 second, ringing stops and a steady tone is heard. A second later, this tone stops and the teletypewriter is turned on automatically.

Note: If the ATL is in use, intermittent "letters" characters will be returned to the TWX to indicate proper connection has been made. The waiting period should be only a few seconds.

4. The ATL sends the following copy to the station:  
THE QUICK BROWN FOX JUMPED OVER A LAZY  
DOG'S BACK 1234567890 \*\*\* SENDING. (The "\*\*\*" will be a three-letter combination used to identify the particular ATL being used.)

Two lines of this copy are sent marked, "UNDIS"; two lines marked, "DIS 28"; two lines marked, "DIS PAD." This is followed by: "GA RY (bell)."

5. Immediately after receiving "GA RY (bell)," the station attendant sends approximately a half line of RY's, or any other signal or group of characters.
  6. The ATL then sends either TRANS OK, or, OUT LIM, followed by "FLIP (2 bells)."
  7. Immediately after receiving, "FLIP (2 bells)," depress the CLEAR control button and then, before the CLEAR lamp goes out, immediately depress the ANSWER button and hold it depressed until the ANSWER lamp lights. This changes the station from the originating to the answer mode.
  8. The ATL again sends the same copy as in "4" above, followed by: "GA RY (bell)."
  9. Immediately after receiving "GA RY (bell)," again send approximately a half line of RY's, or any other signal or group of characters.
  10. The ATL then sends either TRANS OK, or, OUT LIM, followed by TNX END. The station will run open for about one second, CLEAR lamp lights, ANSWER lamp goes out, and the teletypewriter is turned off automatically. The CLEAR lamp goes out after about one second.
- c. The telephone testman or repairman will then generally question the attendant on the copy received, particularly as to whether it was TRANS OK or OUT LIM as specified in "6" and "10" preceding.

## **Notes**

## **Notes**

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**TTY 4**